

AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently amended) A semiconductor laser element, comprising:

a semiconductor laser region including a plurality of laser emission portions each having the same construction relative to one another and arranged side by side in a parallel array and having a common modulation electrode traversing and covering only the laser emission portions, each of said laser emission portions including an active layer for emitting light;

a multimode interference region including a first wave-guiding layer;

an input waveguide region located between the semiconductor laser region and the multimode interference region, said input waveguide region including a plurality of wave-guiding portions where all the wave-guiding portions are equal length in an optical direction; and

an output waveguide region including a second wave-guiding layer, the second wave-guiding layer being optically coupled to an opposite end of the first wave-guiding layer of the interference region, wherein the material comprising the first wave-guiding layer is different from that of the active layers of the laser emission portions.

2. (Cancelled)

3. (Previously Presented) A semiconductor laser element according to claim 1, wherein the semiconductor laser region, the multimode interference region, and the output waveguide region are provided on a same semiconductor substrate.

4. (Original) A semiconductor laser element according to claim 3, further comprising:

a first electrode provided on a lower surface of the semiconductor substrate; and

a second electrode provided at least on a upper surface of the semiconductor laser region.

5. (Withdrawn) A semiconductor laser element according to claim 4, further comprising a third electrode provided over at least one of the output waveguide region and at least a portion of the multimode interference region.

6. (Withdrawn) A semiconductor laser element according to claim 5, wherein a bias voltage is applied to the third electrode.

7. (Withdrawn) A semiconductor laser element according to claim 4, wherein the second electrode extends to at least a portion of an upper surface of the multimode interference region.

8. (Withdrawn) A semiconductor laser element according to claim 3, further comprising:

a first electrode provided on a lower surface of the semiconductor substrate; and

a fourth electrode provided at least on a upper surface of the multimode interference region.

9. (Currently amended) A semiconductor laser element according to claim 1, wherein, ~~the active layer of the plurality of laser emission portions,~~ the first wave-guiding layer of the multimode interference region, and the second wave-guiding layer of the output waveguide region are integrally formed of a same type of semiconductor material.

10. (Currently amended) A semiconductor laser element according to claim 1 ~~and additionally comprising~~ wherein the plurality of waveguide portions of the input waveguide region located between the semiconductor laser region and the interference region, ~~and including~~ include a plurality of mutually spaced apart substantially equal length third wave-guiding layers for optically coupling the

active layers of the plurality of laser emission portions and the first wave-guiding layer of the multimode interference region.

11. (Currently amended) A semiconductor laser element according to claim 10, wherein ~~the plurality of active layers~~, the first wave-guiding layer, and the plurality of the third wave-guiding layers are integrally formed of the same material.

12. (Previously presented) A semiconductor laser element according to claim 10, wherein the first wave-guiding layer and the plurality of third wave-guiding layers are comprised of low optical absorption material.

13. (Original) A semiconductor laser element according to claim 12, wherein the first wave-guiding layer and the plurality of third wave-guiding layers are formed of AlGaAs.

14. (Original) An electronic device comprising the semiconductor laser element of claim 1, wherein the electronic device supplies a modulation signal to the semiconductor laser element.

15. – 19. (Cancelled)

20. (Previously presented) A semiconductor laser element according to claim 28, wherein:

a dielectric film is provided between the plurality of active layers of the laser region and the plurality of second wave-guiding layers of the input waveguide region; and

wherein the plurality of active layers of the laser region and the plurality of second wave-guiding layers of input waveguide regions are optically coupled to each other through the dielectric film.

21. (Previously presented) A semiconductor laser element according to claim 28, wherein the first wave-guiding layer and the plurality of second wave-guiding layers are comprised of the same material having a low light absorption.

22. (Previously presented) A semiconductor laser element according to claim 21, wherein the first wave-guiding layer and the plurality of second wave-guiding layers are comprised of AlGaAs.

23. (Previously presented) A semiconductor laser element according to claim 28, wherein each of the plurality of second wave-guiding layers of the input waveguide region has a predetermined equivalent refractive index.

24. (Previously presented) A semiconductor laser element according to claim 28, wherein each of the plurality of second wave-guiding layers has a predetermined width.

25. (Previously presented) A semiconductor laser element according to claim 24, wherein a manufacturing accuracy in the width of each of the plurality of second wave-guiding layers with respect to the predetermined width is 0.05 μm or smaller.

26. (Previously presented) A semiconductor laser element according to claim 28, wherein the geometric pattern of the plurality of second wave-guiding layers is made by a reduction exposure method.

27. (Previously presented) An electronic device including the semiconductor laser element of claim 28, which outputs a modulated signal to the semiconductor laser element.

28. (Currently amended) A semiconductor laser element, comprising:

a semiconductor laser region including a plurality of laser ~~oscillation~~ emission portions each having the same construction relative to one another, arranged side by side, and having a common modulation electrode traversing all of the laser emission portions and covering only the laser emission portions for operating said laser emission portions in a single mode, each of said laser emission portions also having an active layer which performs laser operations at a same wavelength;

a multimode interference region including a first wave-guiding layer coupled to said laser ~~oscillation~~ emission portions via an input waveguide region including a plurality of parallel equal length waveguides having respective second wave-guiding layers where all the waveguides are equal in length in an optical direction;

an output waveguide region including a third wave-guiding layer coupled to said second wave-guiding layers;

wherein the material comprising the plurality of second wave-guiding layers is different from that of the active layers of the laser emission portions and wherein the active layer of the plurality of laser ~~oscillation~~ emission

portions, the first wave-guiding layer of said multimode interference region, the second wave-guiding layers of the input waveguide region, and the third wave-guiding layer of the output waveguide region are formed on a common substrate.